

WHAT IS CLAIMED IS:

1. A retroviral expression vector comprising a gene expression unit which includes a selected gene under the control of a β -actin promoter, the gene expression unit being positioned to effect transcription of the selected gene in an orientation opposite that of retroviral transcription.

10 2. The vector of claim 1, wherein the selected gene encodes an RNA molecule that alters the expression of a cellular gene.

15 3. The vector of claim 2, wherein the selected gene encodes an antisense RNA molecule.

20 4. The vector of claim 3, wherein the gene encodes an antisense RNA molecule that is complementary to a selected cellular gene.

25 5. The vector of claim 3, wherein the antisense molecule is complementary to an oncogene sequence.

30 6. The vector of claim 3, wherein the encoded antisense RNA molecule capable of selectively inhibiting the expression of selected gene product, the encoded antisense RNA molecule including a region that is complementary to and capable of hybridizing with an intron region of the selected gene.

35 7. The vector of claim 6, wherein the selected gene product is a product of a gene family member and encodes an intron region that is distinct from intron regions of another family member,

the antisense RNA molecule being capable of selectively inhibiting the expression of the selected gene product over that of another member of the family.

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8. The vector of claim 6, wherein the encoded RNA molecule includes a sequence that is complementary to an entire intron.

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9. The vector of claim 8, wherein the encoded RNA molecule comprises a sequence that is complementary to exon region sequences of the selected gene.

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10. The vector of claim 9, wherein sequences complementary to the intron and exon regions of the selected gene are adjacent, and includes a sequence that is complementary to an intron/exon junction of the selected gene.

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11. The vector of claim 7, wherein the gene family comprises the ras, myc, erb or jun family of oncogenes.

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12. The vector of claim 5, wherein the oncogene is one which is activated by a point mutation.

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13. The vector of claim 11, wherein the oncogene is a ras oncogene.

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14. The vector of claim 13, wherein the RNA encodes a sequence that is complementary to an intron region of the p21 K-ras oncogene that is not found in an intron of H-ras or N-ras.

15. The vector of claim 14, wherein the intron region comprises a region from intron II of the p21 K-ras oncogene.

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16. The vector of claim 15, wherein the molecule encodes sequences complementary to exons II and III and intron II of K-ras.

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17. The vector of claim 1, wherein the selected gene encodes a recombinant protein.

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18. The vector of claim 17, wherein the recombinant protein confers a selected trait.

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19. The vector of claim 18, wherein the selected gene encodes recombinant wild-type p53.

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20. The vector of claim 1, wherein the gene expression unit is positioned in an orientation that is opposite that of retroviral LTR.

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21. The vector of claim 1, further defined as a vector derived from Moloney murine leukemia virus.

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22. The vector of claim 1, further comprising a second gene expression unit which includes a second gene, expressed from a retroviral long-term repeat.

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23. The vector of claim 22, wherein the second gene comprises a selectable marker gene.
- 5 24. The vector of claim 23, wherein the selectable marker gene comprises a *neo* gene.
- 10 25. A pharmaceutical composition comprising the vector of any one of claims 1 - 24, in a pharmacologically acceptable state.
26. A method for the preparation of a retroviral expression vector comprising constructing a gene expression unit which includes a selected gene placed under the control of a β -actin promoter, and positioning the gene expression unit into a selected retroviral vector in an orientation opposite that of retroviral transcription.
27. A method for the expression a gene encoding a selected RNA, the method comprising preparing a retroviral expression vector that includes a gene expression unit comprised of a selected gene under the control of a β -actin promoter, the gene expression unit being positioned to effect transcription of the selected gene in an orientation opposite that of retroviral transcription, and expressing the selected gene.
- 30 28. The method of claim 27, wherein the retroviral expression vector is expressed through introduction into a host cell.
- 35 29. The method of claim 28, wherein cells into which the retroviral expression vector have been introduced are introduced

into a host organism.

30. The method of claim 28, wherein the retroviral expression
vector is introduced into a host organism.
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Ade
R2
R3

R3
C1